



Patent
270/234

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:
Y. Takai, et al.

Serial No.: 10/037,477

Filed: January 2, 2002

For: METHOD AND APPARATUS FOR
IRRADIATING A TARGET

)
) Group Art Unit: 2882
)
) Examiner: Unknown
)
)
)
)
)
)
)

PRELIMINARY AMENDMENT

Commissioner for Patents
Washington, D.C. 20231

Sir:

Please enter the following preliminary amendment to the
above identified patent application before substantive
examination.

04/09/2002 HNDORI 2000022 152473 15037477

01 FE:101	740.00 CH
02 FC:102	168.00 CH
03 FD:103	234.00 CH

IN THE SPECIFICATION

Please replace paragraph [0024] on pages 8 and 9 with:

[0024] In accordance an alternative embodiment of the present invention, the radiation beam generated by radiation source 12 serves as both a radiation treatment beam and an image forming beam. Apparatus 20 includes an image detector (not shown in Fig. 2) for detecting the images of the target or fiducial markers on the patient formed by the radiation beam generated by radiation source 12. In a typical radiation treatment therapy, the radiation beam generated by radiation source 12 is a high energy X-ray beam at an MV energy spectrum. On the other hand, the image beam generated by image beam source 11A or 11B typically has a kV energy spectrum. A system using X-ray radiation at different energy spectrums for imaging is described in U.S. Patent Application Serial No. 10/033,327 entitled "RADIOTHERAPY APPARATUS EQUIPPED WITH AN ARTICULABLE GANTRY FOR POSITIONING AN IMAGING UNIT" and filed on November 2, 2001 and U.S. Patent Application Serial No. 10/013,199 entitled "X-RAY IMAGE ACQUISITION APPARATUS" and filed on November 2, 2001, which are incorporated herein by reference in their entireties.

IN THE CLAIMS

Please add the following claims to the application:

1 31. (New) The method as claimed in claim 1, wherein the step
2 of establishing a relationship of at least one marker
3 relative to the target includes using an anatomy of a
4 patient undergoing a radiation treatment as the at least
5 one marker.

1 32. (New) The method as claimed in claim 31, wherein the step
2 of establishing a relationship of at least one marker
3 relative to the target includes using an internal anatomy
4 of the patient as the at least one marker.

1 33. (New) The method as claimed in claim 31, wherein the step
2 of establishing a relationship of at least one marker
3 relative to the target includes using an external anatomy
4 of the patient as the at least one marker.

REMARKS

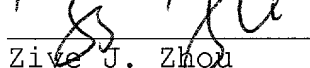
By this preliminary amendment, the specification has been amended to update reference information, and new claims 31-33 have been added to the application. Claims 1-33 are pending in the subject application. A marked version of amended paragraph in the specification is presented in Appendix A.

Should the Examiner have any questions or comments, he is invited to call the undersigned representative of Applicants at (408) 993-1555.

Respectfully submitted,

LYON & LYON LLP
Attorneys for Applicant

Dated: April 2, 2002

By: 
Ziyue J. Zhou
Reg. No. 41,423

633 West Fifth Street, Suite 4700
Los Angeles, California 90071-2066
(408) 993-1555



Patent
270/234

APPENDIX A

MARKED UP VERSION OF AMENDED PARAGRAPH IN THE SPECIFICATION

[0024] In accordance an alternative embodiment of the present invention, the radiation beam generated by radiation source 12 serves as both a radiation treatment beam and an image forming beam. Apparatus 20 includes an image detector (not shown in Fig. 2) for detecting the images of the target or fiducial markers on the patient formed by the radiation beam generated by radiation source 12. In a typical radiation treatment therapy, the radiation beam generated by radiation source 12 is a high energy X-ray beam at an MV energy spectrum. On the other hand, the image beam generated by image beam source 11A or 11B typically has a kV energy spectrum. A system using X-ray radiation at different energy spectrums for imaging is described in U.S. Patent Application Serial No. 10/033,327 [___/_____] (Attorney Docket No. 05513.P003)] entitled "RADIOTHERAPY APPARATUS EQUIPPED WITH AN ARTICULABLE GANTRY FOR POSITIONING AN IMAGING UNIT" and filed on November 2, 2001 and U.S. Patent Application Serial No. 10/013,199 [___/_____] (Attorney Docket No. 261/132)] entitled "X-RAY IMAGE ACQUISITION APPARATUS" and filed on November 2001, which are incorporated herein by reference in their entireties.

10037477 07.1502

RECEIVED
APR 05 2002
TECHNOLOGY CENTER 2800